THE CLAIMS

What is claimed is:

1. A golf ball comprising a core, a moisture vapor barrier layer and a cover, wherein the moisture vapor barrier layer has a moisture vapor transmission rate that is lower than that of the cover and the moisture vapor barrier layer comprises a copolymer of ethylene and methacrylic acid.

2. A golf ball set forth in claim 1, wherein the moisture vapor barrier layer comprises a terpolymer of ethylene, a softening acrylate class ester such as methyl acrylate, n-butyl-acrylate or iso-butyl-acrylate, and a carboxylic acid such as acrylic acid or methacrylic acid.

3. The golf ball set forth in claim 2, wherein the terpolymer is a terpolymer of ethylene, methyl acrylate and acrylic acid.

4. The golf ball set forth in claim 1, wherein the moisture vapor barrier layer further comprises a copolymer of ethylene and acrylic acid.

5. The golf ball as set forth in claim 1, wherein the moisture vapor barrier layer further comprises a terpolymer of ethylene, a softening acrylate class ester such as methyl acrylate, n-butyl-acrylate or iso-butyl-acrylate, and a carboxylic acid such as acrylic acid or methacrylic acid, and a copolymer of ethylene and acrylic acid.

6. The golf ball as set forth in claim 1, wherein the copolymer of ethylene and methacrylic acid is a polyethylene methacrylic acid resin.

7. The golf ball as set forth in claim 1, wherein the acid level by weight in the copolymer of ethylene and methacrylic acid is in the range of about 3 % to about 25%.

8. The golf ball as set forth in claim 7, wherein the acid level by weight in the copolymer of ethylene and methacrylic acid is in the range of about 4 % to about 15%.

9. The golf ball as set forth in claim 8, wherein the acid level by weight in the copolymer of ethylene and methacrylic acid is in the range of about 7 % to about 11%.

10. The golf ball set forth in claim 1, wherein the copolymer of ethylene and methacrylic acid has a melt flow index in the range between about 1gram/10 minutes to about 500 grams/10 minutes.

11. The golf ball set forth in claim 10, wherein the melt flow index of the copolymer of ethylene and methacrylic acid is in the range of about 3 grams/10 minutes to about 60 grams/10 minutes.

12. The golf ball set forth in claim 11, wherein the melt flow index of the copolymer of ethylene and methacrylic acid is in the range of about 3 grams/10 minutes to about 35 grams/10 minutes.

13. The golf ball set forth in claim 12, wherein the melt flow index of the copolymer of ethylene and methacrylic acid is in the range of about 5 grams/10 minutes to about 25 grams/10 minutes.

14. The golf ball set forth in claim 1, wherein the thickness of the water vapor barrier layer is about 0.030 inch or less.

15. The golf ball set forth in claim 14, wherein the thickness of the water vapor barrier layer is about 0.020 inch or less.

16. The golf ball set forth in claim 15, wherein the thickness of the water vapor barrier layer is from about 0.020 inch to about 0.005 inch.

17. The golf ball set forth in claim 1, wherein the water vapor barrier layer is made from two semi-cured half shells compression-molded on to the core.

18. A golf ball comprising a core, a water vapor barrier layer and a cover, wherein the water vapor barrier layer has a moisture vapor transmission rate that is lower than that of the cover and the water vapor barrier layer comprises a terpolymer of ethylene, a softening acrylate class ester such as methyl acrylate, n-butyl-acrylate or iso-butyl-acrylate, and a carboxylic acid such as acrylic acid or methacrylic acid.

19. The golf ball set forth in claim 18, wherein the terpolymer is a terpolymer of ethylene, methyl acrylate and acrylic acid.

20. The golf ball as set forth in claim 18, wherein the acid level by weight in the terpolymer is in the range of about 3 % to about 25%.

21. The golf ball as set forth in claim 20, wherein the acid level by weight in the terpolymer is in the range of about 4 % to about 15%.

22. The golf ball as set forth in claim 21, wherein the acid level by weight in the terpolymer is in the range of about 7 % to about 11%.

23. The golf ball set forth in claim 18, wherein the terpolymer has a melt flow index in the range between about 1gram/10 minutes to about 500 grams/10 minutes.

24. The golf ball set forth in claim 23, wherein the melt flow index of the terpolymer is in the range of about 3 grams/10 minutes to about 60 grams/10 minutes.

25. The golf ball set forth in claim 24, wherein the melt flow index of the terpolymer is in the range of about 3 grams/10 minutes to about 35 grams/10 minutes.

26. The golf ball set forth in claim 25, wherein the melt flow index of the copolymer of ethylene and methacrylic acid is in the range of about 5 grams/10 minutes to about 25 grams/10 minutes.

27. A golf ball comprising a core, a water vapor barrier layer and a cover, wherein the water vapor barrier layer has a moisture vapor transmission rate that is lower than that of the cover and the water vapor barrier layer comprises a copolymer of ethylene and acrylic acid.

28. The golf ball as set forth in claim 27, wherein the acid level by weight in the copolymer of ethylene and acrylic acid is in the range of about 3 % to about 25%.

29. The golf ball as set forth in claim 28, wherein the acid level by weight in the copolymer of ethylene and acrylic acid is in the range of about 4 % to about 15%.

30. The golf ball as set forth in claim 29, wherein the acid level by weight in the copolymer of ethylene and acrylic acid is in the range of about 7 % to about 11%.

31. The golf ball set forth in claim 27, wherein the copolymer of ethylene and acrylic acid has a melt flow index in the range between about 1gram/10 minutes to about 500 grams/10 minutes.

32. The golf ball set forth in claim 31, wherein the melt flow index of the copolymer of ethylene and acrylic acid is in the range of about 3 grams/10 minutes to about 60 grams/10 minutes.

33. The golf ball set forth in claim 32, wherein the melt flow index of the copolymer of ethylene and acrylic acid is in the range of about 3 grams/10 minutes to about 35 grams/10 minutes.

34. The golf ball set forth in claim 33, wherein the melt flow index of the copolymer of ethylene and acrylic acid is in the range of about 5 grams/10 minutes to about 25 grams/10 minutes.

35. A golf ball comprising a core, a water vapor barrier layer and a cover, wherein the water vapor barrier layer has a moisture vapor transmission rate that is lower than that of the cover and the water vapor barrier layer comprises a material having a melt flow index greater than 1gram/10 minutes.

36. The golf ball of claim 35, wherein the material has a melt flow index of about 500 grams/10 minutes or less.

37. The golf ball set forth in claim 36, wherein the melt flow index is in the range of about 3 grams/10 minutes to about 60 grams/10 minutes.

38. The golf ball set forth in claim 37, wherein the melt flow index is in the range of about 3 grams/10 minutes to about 35 grams/10 minutes.

39. The golf ball set forth in claim 38, wherein the melt flow index is in the range of about 5 grams/10 minutes to about 25 grams/10 minutes.

40. The golf ball set forth in claim 35, wherein the thickness of the water vapor barrier layer is about 0.030 inch or less.

41. The golf ball set forth in claim 40, wherein the thickness of the water vapor barrier layer is about 0.020 inch or less.

42. The golf ball set forth in claim 41, wherein the thickness of the water vapor barrier layer is from about 0.020 inch to about 0.005 inch.

43. The golf ball set forth in claim 35, wherein the water vapor barrier layer is made from two semi-cured half shells compression-molded on to the core.

44. The golf ball set forth in claim 35, wherein the core is selected from a group consisting of natural rubber, polybutadiene, polyisoprene, styrene-butadiene, styrene-propylene-diene, ionomer resin, polyamide, polyester, thermoplastic elastomer, castable urethane, castable polyurea, castable epoxy, castable silicone, IPN, reaction injection molded polyurethane, reaction injection molded polyurea.

45. The golf ball set forth in claim 35, wherein the core comprises a polybutadiene having a Mooney viscosity in the range of about 40 to about 65.

46. The golf ball set forth in claim 45, wherein the core has a compression of about 30 to about 80.

47. The golf ball set forth in claim 45, wherein the core further comprises a metal salt of pentachlorothiophenol.

48. The golf ball set forth in claim 45, wherein the core further comprises pentachlorothiophenol.

49. The golf ball set forth in claim 35, wherein the cover is selected from a group consisting of ionomer resins, blends of ionomer resins, thermoplastic urethane, thermoset urethane, acrylic acid, methacrylic acid, thermoplastic rubber polymers consisting of block copolymers, polyethylene, synthetic vulcanized rubber and natural vulcanized rubber.

50. The golf ball set forth in claim 35, wherein the cover comprises a thermoset polyurethane.

51. The golf ball set forth in claim 35, wherein the water vapor barrier is an intermediate member.